

The Public's Assessment of the NWS Point-and- Click Forecasts

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2nd NOAA Testbed Workshop

May 5, 2010



Your National Weather Service forecast
Boulder CO

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Point Forecast: Boulder CO [\[Similar City Names\]](#) Last Update: 4:17 am MDT May 4, 2010
40.02°N 105.25°W (Elev. 5356 ft) Forecast Valid: 12pm MDT May 4, 2010-6pm MDT May 10, 2010

Forecast at a Glance

This Afternoon	Tonight	Wednesday	Wednesday Night	Thursday	Thursday Night	Friday	Friday Night	Saturday
Windy	Breezy	10% Slight Chc Tstms	10% Slight Chc Showers	20% Slight Chc Showers	30% Chance Rain/Snow	20% Slight Chc Rain/Snow	Mostly Cloudy	Mostly Sunny
Hi 70 °F	Lo 36 °F	Hi 62 °F	Lo 40 °F	Hi 52 °F	Lo 32 °F	Hi 52 °F	Lo 32 °F	Hi 59 °F

Detailed 7-day Forecast **Current Conditions** [\[Move Down\]](#)
Hazardous weather condition(s): [view Yesterday's Weather](#)

[High Wind Warning](#)
[Hazardous Weather Outlook](#)
[Short Term Forecast](#)

This Afternoon: Sunny, with a high near 70. Windy, with a west wind between 24 and 30 mph, with gusts as high as 60 mph.

Tonight: Partly cloudy, with a low around 36. Breezy, with a west wind between 20 and 23 mph becoming light. Winds could gust as high as 37 mph.

Wednesday: A 10 percent chance of showers and thunderstorms after noon. Mostly cloudy, with a high near 62. South southwest wind at 8 mph becoming east northeast.

Wednesday Night: A 10 percent chance of showers before midnight. Mostly cloudy, with a low around 40. Northwest wind between 4 and 7 mph becoming calm.

Thursday: A 20 percent chance of showers. Mostly cloudy, with a high near 52. Light north northwest wind.

Broomfield/Jeffco
Lat: 39.91 Lon: -105.12 Elev: 5656
Last Update on May 4, 10:50 am MDT

A Few Clouds and Windy
68 °F (20 °C)

Humidity:	11 %
Wind Speed:	W 26 G 46 MPH
Barometer:	29.76"
Dewpoint:	12 °F (-11 °C)
Visibility:	40.00 mi.

[More Local Wx:](#) [3 Day History:](#)

Radar and Satellite Images

Project motivation

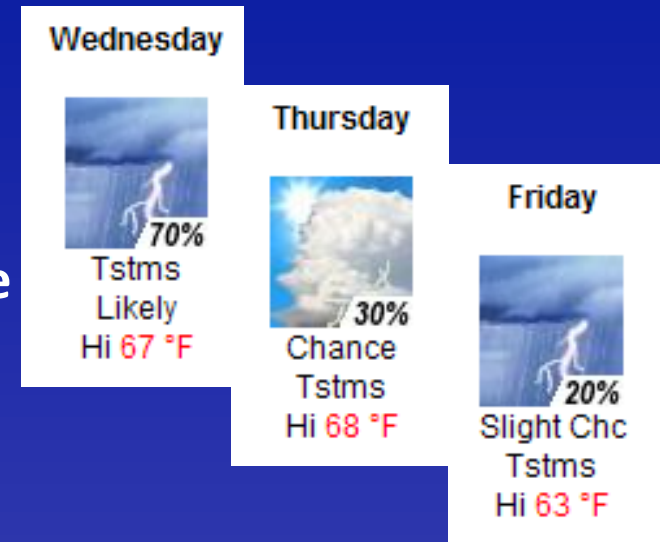
- Weather.gov is the face of NWS
 - Accessed millions of times daily
 - Accessed for myriad individual reasons ... common thread is to inform decision-making
- Point-and-click forecast information can be *misleading, inconsistent, and incomplete*
- Little reliable and valid data about weather forecast information from the users' perspectives
 - Research results will inform the entire Weather Enterprise

Relevance to NWS mission


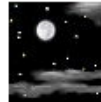



- Protecting life and property and enhancing the national economy goes beyond the physical science
- Scientifically accurate weather forecast is *insufficient* if the information is *communicated ineffectively* or *doesn't include information that people can use*
- Research will fold back into *operations* and *improve* the communication of forecast information to *enhance people's decision-making*

Ex. 1 – Inconsistent icons?

Looking at the forecast at a glance icons for today, I couldn't help but notice some glaring contradictions. Note the icons for tonight Wednesday, Thursday and Friday. 70% chance means you pretty much bet on some storms, which the icon indicates. **It's the icon on Friday that troubles me. It is the exact same icon used for 70% storms but it says the chance is only 20%. Also it appears just by looking at the icons, that there is a greater chance for storms Friday than there is Thursday when in fact, Thursday's pops are 10% higher. Is there something I'm missing here? Why the inconsistencies and apparent contradictions between the PoP displays and their icons?**



Ex. 2 – A dusting of snow? Or more?

Forecast at a Glance				
Today	Tonight	Thursday	Thursday Night	Friday
				
Sunny	Mostly Clear	Mostly Sunny	Chance Snow	Snow Likely
Hi 66 °F Lo 35 °F	Lo 35 °F	Hi 63 °F	Lo 28 °F	Hi 29 °F

Detailed 7-day Forecast

Hazardous weather condition(s):

Hazardous Weather Outlook

Today: Sunny, with a high near 66. West wind between 3 and 10 mph.

Tonight: Mostly clear, with a low around 35. West wind between 6 and 13 mph.

Thursday: Mostly sunny, with a high near 63. West northwest wind between 6 and 11 mph.

Thursday Night: A 40 percent chance of snow after midnight. Mostly cloudy, with a low around 28. Calm wind becoming northeast between 6 and 9 mph.




Friday: Snow likely. Cloudy, with a high near 29. North northeast wind between 9 and 15 mph, with gusts as high as 21 mph. Chance of precipitation is 70%.

AFD – ATTENTION NOW TURNS TO THE **BIG WEATHER MAKER** ORGANIZING TO OUR NORTHWEST. MODELS IN VERY GOOD AGREEMENT WITH REGARD TO LARGE SCALE DETAILS. ... MODELS INDICATE PLENTY OF MOISTURE AND COLD AIR WITH THIS SYSTEM...WITH PRECIPITABLE WATER VALUES OFF MODEL SOUNDINGS IN THE 0.35 TO 0.50 INCH RANGE AT THE PEAK OF THE STORM FRIDAY AFTERNOON. ALL THIS SHOULD COMBINE TO PRODUCE **SIGNIFICANT SNOWFALL...WIND AND UNSEASONABLY COLD TEMPERATURES ACROSS THE ENTIRE FORECAST AREA FRIDAY.** GREATEST IMPACT WILL LIKELY BE FELT EAST OF THE CONTINENTAL DIVIDE WHERE MODEL SNOW ACCUM FIELDS INDICATE **UPWARDS OF A FOOT OR SO OF SNOW IN THE MTNS AND FOOTHILLS...7-10 INCHES ON THE PALMER DIVIDE...5-8 INCHES FROM DENVER NORTH TO THE WYOMING LINE...AND SIMILAR AMOUNTS ACROSS EASTERN ELBERT AND NRN LINCOLN COUNTIES. LIGHTER TOTALS ARE PROGGED FARTHER OUT ACROSS THE NERN PLAINS.** WOULDN/T RULE OUT AREAS OF BLOWING SNOW ON THE PLAINS WITH 20-30KT NELY SFC WINDS DURING THE MORNING AND EARLY AFTERNOON. **IT/S NOT GOING TO BE FUN FOR TRAVELERS.**

HWO – ACCUMULATING SNOWFALL AND UNSEASONABLY COLD TEMPERATURES ARE IN STORE... AN UPPER LEVEL STORM SYSTEM ORGANIZING OVER THE NORTHERN ROCKIES AND PACIFIC NORTHWEST ON THURSDAY WILL CROSS THE OUTLOOK AREA ON FRIDAY. A STRONG CANADIAN COLD FRONT ACCOMPANYING THIS STORM SYSTEM IS EXPECTED TO SLIDE SOUTH ACROSS NORTHEAST COLORADO EARLY FRIDAY MORNING USHERING IN **SIGNIFICANTLY COLDER TEMPERATURES AND THE POTENTIAL FOR SEVERAL INCHES OF SNOW.** **GUSTY NORTHEAST WINDS MAY ALSO PRODUCE AREAS OF BLOWING SNOW** ON THE PLAINS BY THE AFTERNOON AS SUB-FREEZING TEMPERATURES CONTINUE TO FALL. **PERSONS PLANNING TRAVEL AND ANY OTHER OUTDOOR ACTIVITIES ON FRIDAY SHOULD PREPARE FOR HARSH WINTER WEATHER CONDITIONS...**

Ex. 3 – When exactly are tstorms fcst?

Forecast at a Glance

Today	Tonight	Friday
		
20%	90%	40%
Slight Chc Tstms	Tstms	Chance Tstms
Hi 80 °F	Lo 52 °F	Hi 67 °F

Detailed 7-day Forecast

Hazardous weather condition(s):

Wind Advisory
Hazardous Weather Outlook

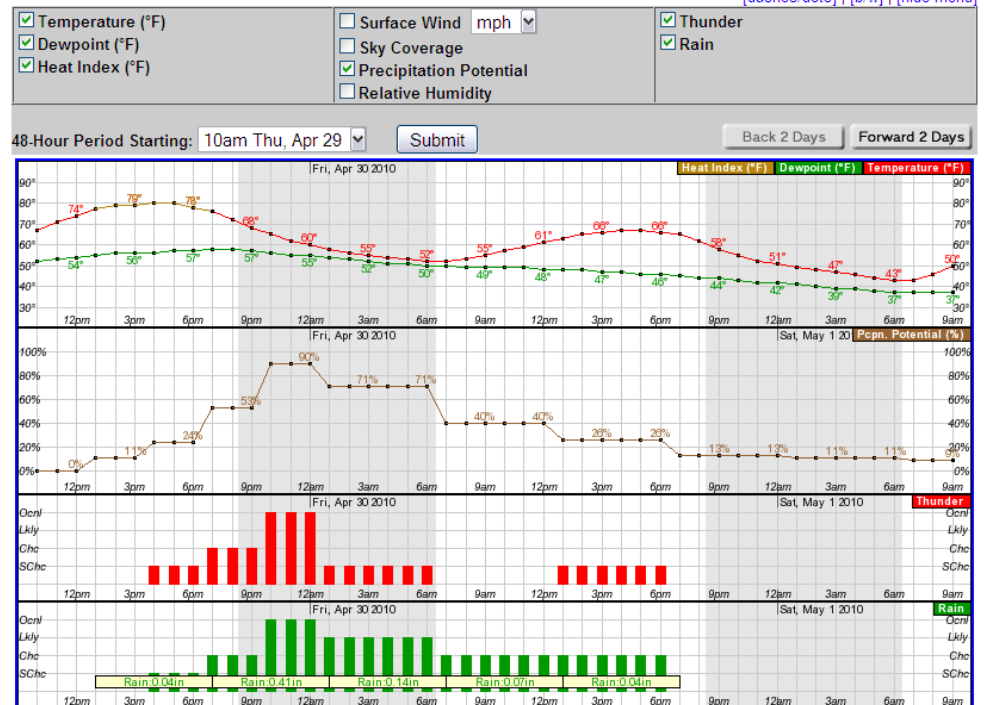
Today: A 20 percent chance of showers and thunderstorms after 4pm. Partly cloudy, with a high near 80. Breezy, with a south southwest wind between 21 and 24 mph, with gusts as high as 32 mph.

Tonight: Showers and thunderstorms, mainly between 10pm and 1am, then showers likely and possibly a thunderstorm after 1am. Low around 52. South wind 8 to 15 mph becoming north northwest. Winds could gust as high as 22 mph. Chance of precipitation is 90%. New rainfall amounts between a half and three quarters of an inch possible.

Friday: A chance of showers, with thunderstorms also possible after 1pm. Mostly cloudy, with a high near 67. West wind between 6 and 13 mph. Chance of precipitation is 40%. New rainfall amounts between a tenth and quarter of an inch, except higher amounts possible in thunderstorms.





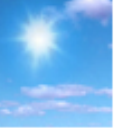

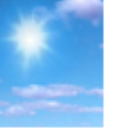

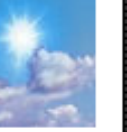
- After 4 pm? Between 10 p.m. and 1 a.m.? After 1 a.m.? After 1 p.m. the next day?
- The whole time??

Hourly Weather Forecast Graph



Ex. 4 – What about that wind advisory?

Forecast at a Glance

This Afternoon	Tonight	Thursday	Thursday Night	Friday	Friday Night	Saturday	Saturday Night	Sunday
								
10% Isolated Showers	Mostly Clear	Sunny	Clear	Sunny	Mostly Clear	Sunny	Mostly Clear	Mostly Sunny
Hi 52 °F	Lo 25 °F	Hi 62 °F	Lo 35 °F	Hi 71 °F	Lo 39 °F	Hi 74 °F	Lo 40 °F	Hi 76 °F

Detailed 7-day Forecast

Hazardous weather condition(s):

Wind Advisory
Hazardous Weather Outlook

This Afternoon: Isolated showers. Mostly cloudy, with a high near 52. Windy, with a north wind between 25 and 30 mph, with gusts as high as 45 mph. Chance of precipitation is 10%.

Tonight: Mostly clear, with a low around 25. North wind 15 to 20 mph decreasing to between 5 and 10 mph. Winds could gust as high as 30 mph.

Thursday: Sunny, with a high near 62. South wind between 10 and 15 mph.

- Rain vs. wind?
- And for when is the HWO valid?

What else do people attend to? Process? Interpret? Use? Want?

Your National Weather Service forecast

Boulder CO

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NWS Denver-Boulder, CO [Mobile Weather Information](#) | [En Español](#)
Point Forecast: Boulder CO [[Similar City Names](#)]
40.02°N 105.25°W (Elev. 5356 ft)
Last Update: 4:21 pm MDT Apr 11, 2010
Forecast Valid: 10pm MDT Apr 11, 2010-6pm MDT Apr 18, 2010

Forecast at a Glance

Tonight	Monday	Monday Night	Tuesday	Tuesday Night	Wednesday	Wednesday Night	Thursday	Thursday Night
Partly Cloudy Lo 43 °F	Mostly Sunny Hi 76 °F	Chance Tstms Lo 40 °F	Chance Tstms Hi 63 °F	Slight Chc Showers Lo 38 °F	Sunny Hi 64 °F	Partly Cloudy Lo 42 °F	Mostly Sunny Hi 66 °F	Mostly Cloudy Lo 42 °F

Detailed 7-day Forecast [Hazardous weather condition\(s\):](#) [view Yesterday's Weather](#)

Hazardous Weather Outlook

Tonight: Partly cloudy, with a low around 43. West wind around 9 mph.

Monday: Mostly sunny, with a high near 76. North northwest wind between 5 and 11 mph.

Monday Night: A slight chance of showers and thunderstorms, then a chance of showers after midnight. Mostly cloudy, with a low around 40. Southwest wind between 8 and 10 mph. Chance of precipitation is 30%.

Tuesday: A 30 percent chance of showers and thunderstorms. Mostly cloudy, with a high near 63. Breezy, with a calm wind becoming west between 21 and 24 mph.

Tuesday Night: A 20 percent chance of showers before midnight. Partly cloudy, with a low around 38. Breezy, with a west wind 26 to 29 mph decreasing to between 16 and 19 mph. Winds could gust as high as 34 mph.

Current Conditions [\(Move Down\)](#)

Broomfield/Jeffco
Lat: 39.91 Lon: -105.12 Elev: 5656
Last Update on Apr 11, 8:52 pm MDT

Mostly Cloudy

57 °F (14 °C)

Humidity: 33 %
Wind Speed: Calm
Barometer: 30.03"
Dewpoint: 28 °F (-2 °C)
Visibility: 25.00 mi.
More Local Wx: [3 Day History](#)

Radar and Satellite Images

Wednesday: Sunny, with a high near 64.

Wednesday Night: Partly cloudy, with a low around 42.

Thursday: Mostly sunny, with a high near 66.

Thursday Night: Mostly cloudy, with a low around 42.

Friday: A slight chance of showers and thunderstorms. Mostly cloudy, with a high near 64.

Friday Night: A slight chance of showers and thunderstorms. Mostly cloudy, with a low around 41.

Saturday: A chance of showers. Mostly cloudy, with a high near 60.

Saturday Night: A chance of showers. Mostly cloudy, with a low around 41.

Sunday: A slight chance of showers. Mostly cloudy, with a high near 59.

Detailed Point Forecast [\[Move Up\]](#)

[Click Map for Forecast](#) [Disclaimer](#)

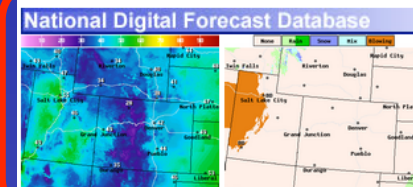
[Map](#) [Satellite](#) [Terrain](#)

Map data ©2010 Google - [Terms of Use](#)

Requested Location: **Boulder** Forecast Area: **Boulder**

Lat/Lon: 40.02°N 105.25°W Elevation: 5356 ft

[XML](#)



Additional Forecasts & Information

Zone Area Forecast for Boulder And Jefferson Counties Below 6000 Feet/West Broomfield County, CO

[Forecast Discussion](#)

Printable Forecast	Text Only Forecast
Hourly Weather Graph	Tabular Forecast
Quick Forecast	
International System of Units	About Point Forecasts
Hazardous Weather	Regional Weather Conditions
Denver Climate Weather Information	Colorado Hourly RAWS Observations
Road Conditions	Graphical Forecast Page
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Denver-Boulder, CO

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Research scope

- 2 year project, jointly funded by OST and OCWWS
- Assess users' interpretations of, uses of, and preferences for the public forecast information
 - Including information that is and is not currently available
- Research will draw on concepts, theories, and methods from the social sciences
 - Communication, psychology, social psychology, economics

Collaborations are key!

- NWS team led by Douglas Hilderbrand
- Other ongoing NWS efforts
 - Curtis Carey's weather.gov redesign
- Collaboration with social scientists with expertise in mass, science, and risk communication
- Advisory committee with NWS forecasters, broadcasters, and private sector meteorologists

*Social science research + physical science
research + operational forecasting +
technical considerations = success!*

Data collection – focus groups

- Initial exploratory focus groups
 - Conducted: 2 with NWS forecasters, 2 with public
 - Planned: at least 2 more with public, perhaps more
 - Results
 - Confusion about time periods to which forecast information applies ... including watches and warnings!
 - Preferences for temporal frequency of forecast information, new information, information presentation
 - Problems accessing information
 - Usability of layout and content
 - Unawareness (by forecasters too!) of all the linked content
 - Much more!

Data collection – survey

- Web-based survey planned for Fall 2010
 - Developing a contact list of point-and-click web page users so we can sample from and survey them in the future
 - Will also sample non-users
 - Will be developing survey questions over the summer
 - Based on input from focus groups
 - Questions drawn from communication literature
 - Possibly test mock-ups

Stay tuned for more in the next year!

Thank you!

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This project is jointly funded by OST and OCWWS.

